DOCUMENT RESUME

ED 186 756 CE 025 417

AUTHOR	Dickson, Mary B.
TITLE	Work Sample Evaluation of Blind Clients: Criteria for Administration and Development.
INSTITUTION	Wisconsin Univ. - Stout, Menomonie. Dept. of Rehabilitation and Manpower Services. Materials Development Center.
SPONS AGENCY	Rehabilitation Services Administration (DHEW), Washington, D.C.
PUB DATE	Aug 76
GRANT	DHEW-RSA-12-P-55307/5
NOTE	56p.; Master's Thesis, University of Wisconsin-Stout.
AVAILABLE FROM	Materials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin--Stout, Menomonie, WI 54751 ($:1.50)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Administrator Guides; *Blindness; Guidelines; Masters Theses; *Test Construction; *Testing; Testing Problems; Test Reviews; Test Selection; *Work Sample Tests
IDENTIFIERS	*Vocational Evaluation

ABSTRACT

Criteria are presented for vocational evaluators who use work samples as one means of determining the vocational potential of blind clients. Included are rationale for the use of work samples; specific steps for their administration, scoring, and use of norms; and criteria for modifying present work samples and developing new ones. A literature review documents the need for work evaluation services for the blind. It covers jobs currently held by the blind and predictions for future employment trends, problems in achieving competitive employment, and current evaluation techniques, both psychological tests and work samples. An evaluation plan for a blind client outlines skills and worker characteristics which should be observed and recorded. Administration of work samples for several specific purposes is examined. The section on modification in administration procedures is organized like the Materials Development Center's "Suggested Format and Content of a Work Sample Manual" (Thomas, 1973) so that evaluators can follow modification which may need to be made in currently used work sample manuals which follow that format. Principles and modifications discussed are applied to three commercial work sample batteries in common use: Jewish Employment and Vocational Service Work Sample Battery, Singer Vocational Evaluation System, and Valpar Component Work Sample Series. Charts on each battery provide modifications in instructions or materials suggested when using the work sample with a visually impaired client. (JT)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED186756

Work Sample Evaluation of Blind Clients: Criteria for Administration and Development

by

Mary B. Dickson
Portland Vocational Development Center
535 Southeast 12th Avenue
Portland, Oregon 97214
August 1976

This publication is a thesis prepared by Mary B. Dickson as part of the requirements for her Master of Science degree in Vocational Rehabilitation, with a Specialty in Vocational Evaluation. This thesis, with its emphasis on practical techniques for the evaluation of persons who have visual handicaps, was published by the Materials Development Center because it was felt that Ms. Dickson has made an original contribution to the work sample evaluation of persons with visual problems. This publication is in keeping with MDC's goal of providing vocational evaluation and work adjustment professionals with practical materials designed to upgrade their skills. As with all its products, MDC welcomes any comments, suggestions, and especially new ideas about the topics covered in this publication.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R. Fry

TO THE EDUCATIONAL RESOURCES NFORMATION CENTER (ERIC)."

CE025417

ADDITIONAL COPIES OF THIS PUBLICATION MAY BE PURCHASED FROM MDC FOR $1.50 PER COPY

TABLE OF CONTENTS

Introduction	1
Review of the Literature	2
Evaluation Planning	7
Evaluation Plan for a Blind Client	8
Work Sample Evaluation Purposes	12
Modification in Administration Procedures	14
Commercial Work Sample Batteries	21
Jewish Employment and Vocational Service Work Sample Battery	21
Singer Vocational Evaluation System	25
Valpar Component Work Sample Series	29
Conclusions	31
Acknowledgements	31
References	32
Appendix I	
Definition of Terms	35
Appendix II	
Chicago Lighthouse for the Blind: Instructions and Demonstration for Blind Clients	36
Appendix III	
E. L. Chambers: Revised Reisterer Mechanical Aptitude Work Sample (Client Orientation Instructions)	42
Appendix IV	
Wisconsin School for the Visually Handicapped, Singer/ Graflex Vocational Evaluation Performance Data	46

Vocational evaluation of blind clients presents special problems not encountered with clients having other disabilities. Many evaluation tools and techniques are presently being used with varying degrees of success, including psychological testing, work sample evaluation, situational assessment, on-the-job training, job tryouts, or a combination of several of these.

Most work samples are designed for use by sighted clients and require that they read the directions or visually acclimate themselves to the task. Verbal instructions usually assume that the client is able to see the task and will use sight in completing it, even if sight is not necessary for the job the work sample may represent. Evaluators question how to use work samples with blind clients, wonder what information they can obtain from a client's performance on them, and ask how to use norms based on "normal people."

With appropriate guidelines, work samples can be valid tools in the vocational evaluation process with blind clients. As one authority admitted,

> My work has been largely psychological testing and the interest in work samples grows out of my feeling that some clients, especially multiply handicapped blind clients, are inadequately evaluated by standard psychological tests (Bauman, 1976).

Approximately 1,900 blind and visually impaired clients are evaluated yearly using work samples (Use of Work Samples with Blind Clients (UWSBC) conference, 1975). Although many agencies report using work samples as part of their evaluation process, nothing but this conference report has ever been published concerning the knowledge acquired through this use.

The objective of this study is to define and present a useable set of criteria for vocational evaluators working with blind clients, using work samples as one means of determining their vocational potential. This will include rationale for the use of work samples, specific steps for their administration and scoring, and use of norms. Criteria for modifying present work samples and developing new ones according to the Materials Development Center's Work Sample Manual Clearinghouse's Suggested Format and Content of a Work Sample Manual (Thomas, 1973) will also be provided.

See Appendix I for definitions of terms used in this paper.

REVIEW OF THE LITERATURE

This review is designed to document the need for work evaluation services for the blind. First, jobs currently held by the blind and predictions of future trends in employment are given. The second section exposes problems in achieving competitive employment, including employer attitudes and stereotypes, while the final two sections delineate current evaluation techniques used, both psychological tests and work samples. The work sample evaluation section also deals with traits to be measured, criteria for developing or modifying samples, and norms.

According to findings of a conference on Planning Services for the Blind (1973), the average industrial worker needs to be retrained six times during his career, and this is probably the minimum number for blind employees. Limited statistics are available concerning the numbers and types of jobs currently performed by the blind. However, Rusalem (1972) concluded, "Apparently, occupational stereotypes do not apply to blind persons" (p. 97). Put another way, "Blindness does not go to work, but the person does" (Wilson, 1974, p. 57). The blind now work in a variety of occupations, and are not limited to those traditionally associated with their handicap.

Most information on jobs held by the blind comes from the U.S. Civil Service Commission (1973) which in 1964 started a special program to hire the severely handicapped. Thirty-three percent of the blind employed worked as Taxpayer Service Representatives for the Internal Revenue Service. Although the largest percentage worked for the Treasury Department, others were placed in the Departments of Transportation; Health, Education, and Welfare; Army; Veterans Administration; and Postal Service. Most were in the lower five grades of the General Schedule (GS) pay schedule, although seven persons reached the GS-7 level (Civil Service Commission, 1973). Among those employed under the Commission's special program were 52 separate job categories, ranging from Auto Mechanic Helper to Meteorologist to Taxpayer Service Clerk.

According to the Final Report of the Conference on Planning Services for the Blind (1973), most blind professional workers now move into jobs with the sighted, as opposed to jobs only in blind industries. Trends show a growing opportunity for employment in computer science. The report also finds many opportunities open in the clerical and secretarial field, including telephone operators, information specialists, employees in loan departments of banks, medical transcribers, and various types of secretaries.

There is currently a low demand for blind workers in trade and technical occupations, but the conference report predicts an increase, especially in trades involving building, printing, machinery, mechanics, communications, dental hygiene, radiology, and data processing. Within industrial and service occupations, the conference report indicates that, "the sophisticated mechanization of industry poses some problems for the counselor of the blind" (p. 52). Two extensive studies present details of jobs held by the blind in professional fields as well as clerical, industrial, and service fields (Bauman & Yoder, n.d.; & 1962).

Vocational evaluation concerns itself with future employment of the handicapped. Studies predict more jobs in service industries than in those

producing goods (Planning Services for the Blind, 1973; Thompson, 1969). Career opportunities are forecast in computerized data processing; instrumentation for measuring, sensing, data acquisition and control; communications, and mechanization of industries such as meat packing and construction. Rapid growth is expected in the health services, as well as service jobs in auto and other repair shops, laundries, hotels, and health clubs.

No matter what fields offer job possibilities, stereotyped attitudes employers traditionally have held against the blind must be overcome. Several so-called rational reasons have been offered for these attitudes: (1) problems with the "second injury" clause of the Workman's Compensation laws, (2) fear of becoming involved with government bureaucracy, (3) the expressed opinion of plant managers that all the work in a plant is considered too dangerous for handicapped people, and (4) the belief that the blind are not flexible enough to do different jobs in a plan (Stajanovic & Carballo, 1963).

Before full competitive employment of the blind can become a reality,

> The most important and the most Herculean task will be to continue to change the attitudes of American businessmen toward employment of the blind. In many cases, the attitudes are so negative as to border on discrimination (Planning Services for the Blind, 1973, p. 46).

Yoder (1969) agreed. He felt employers must be committed to the whole person, not just his blindness, and he believed that the attitudes associated with "wardism, our people, and the poor blind" (p. 436) have no place in future occupational development.

In order to overcome the prevailing attitudes toward hiring the blind in competitive employment, Yoder (1969) suggested four criteria for blind people looking for work. They must (1) be psychologically well adjusted, (2) be flexible and trainable, (3) have basic productive skills, and (4) be technically sound and able to take advantage of ground floor opportunities.

Another study suggested good mobility skills, imaginative approaches to problem solving, and use of special tools and equipment as aids in securing employment (Planning Services for the Blind, 1973).

Currently, one of the biggest barriers to successful evaluation of the blind is the inadequacy of testing instruments (Clawson, 1968). Bauman (1968) sent questionnaires to psychologists in the U.S. and Canada who tested blind persons. The results of her study provided insight into the problems of tests and norms used in this process. She listed all the psychological tests used by psychologists working with the blind, including those measuring intelligence, developmental and social maturity, achievement, special aptitude, dexterity, interest and values, and personality. Besides general information about the tests, she included comments made by the psychologists surveyed. The second part of her book dealt exclusively with administration and norming of the Minnesota Rate of Manipulation, Pennsylvania Bi-Manual Work Sample, and Crawford Small Parts Dexterity tests. The final section dealt with norms.

Routh (1970) presented some of the problems in psychological testing of the blind. He claimed that some clients come from the lower end of the

socioeconomic scale and have correspondingly low IQs. Because of poor vocabulary skills, they may have inherent difficulties in verbal portions of interest inventories and achievement tests. If their blindness is congenital, they may lack the opportunities to experience even the concepts needed to successfully complete interest inventories.

Routh (1970) also dealt with adapting and norming psychological tests for use with the blind. For example, he pointed out that pictures used in the WAIS Picture Completion subtest are obviously unsuitable, and that even using toys to represent the objects does not duplicate the test accurately. He also noted the problem of orientation to a task. When a sighted person must put pegs into holes, he can orient himself in just a glance, whereas a blind person must take much longer to feel everything.

Another problem with psychological test administration is reading the questions. Bauman (1968) found that a person who took an interest inventory orally performed quite poorly, but when given a parallel form of the test in Braille, her score was a better indication of her interests.

The question of separate norms for the blind raises much controversy. Routh (1970) felt that the blind must compete with the sighted, so there is no need for separate norms, and he noted that separate norms would only be needed for manipulative tests, since others measure verbal qualities. He also felt that present IQ tests are adequate and do not require separate norms. He felt he could justify separate norms only if the person was to be shut away with other blind people, but if he intended to function with the sighted, he must be normed with the sighted. He concluded that the question really revolved around the use to which the results would be put.

Besides psychological tests, vocational evaluators use work samples to determine a person's employment interests and aptitudes. Several positions concerning the adaptation and norming of work samples have been stated. Sax (1975) claimed that there should be no special work samples for the blind since work evaluation is designed to show what a person can do in real work, regardless of his disability, and unless the job could be altered to accommodate a specific handicap, the work sample should not be altered. However, Sax modified his admonition not to design work samples to be administered to those with specific disabilities by saying that this did not preclude identifying work samples which have been found to be useful in evaluating those within a specific disability group.

His view is not shared by Konrath, who claimed,

> One of our real objectives in vocational rehabilitation is to identify work skills in a frequently physical handicapped population. Not to provide for legitimate modifications of samples developed and normed on the non-handicapped is to exclude most of the population the field proposes to serve (Konrath, 1976).

The Commission on Accreditation of Rehabilitation Facilities (CARF) has decreed that evaluation of all clients must use techniques appropriate to the individual and has stated:

> Appropriate adaptive assessment tools and methods shall be used wherever possible with individuals having sensory, communication,

or other functional impediments (e.g., visual, hearing, speech, language, cultural, or learning disabilities) which might invalidate otherwise standardized procedures (CARF, 1976).

The CARF standards provide direction which indicates that adaptations not only can, but should, be made to fit the person's disability. However, there have been very few work samples designed specifically for use with blind clients. The Clawson Worksample Battery (Clawson, 1968; Hoffman, 1970) was the first such battery. There have been other, isolated samples such as the Hand-Tool Dexterity, Manual Ability, Rate of Manipulation, Small Parts Assembly, and Wiggly Block (NYIEB, 1945). The New York Institute for the Education of the Blind (1945) assembled a battery consisting of Matching Forms, Assembly of Washers and Screws, Miscellaneous Hardware Sorting, Washer Sorting, Playskool Assembly, and a Room Orientation mobility test.

The Clawson work samples consisted of five different tasks, two of which, the Envelope and Washer, were simulated job samples. The other three, the Vial, Catheter, and Valve, were taken from industry, but unfortunately, are no longer jobs available in industry (Hoffman, 1970). One of the disadvantages of the Clawson was that it took a long time to administer, although this did give the evaluator the opportunity to observe work habits, accuracy, and stamina of the client (Clawson, 1968).

As early as 1944, the need for separate instructions for the blind was recognized (Roberts & Bauman, 1944), and were provided for two standard dexterity tests, the Minnesota Rate of Manipulation Test and the Pennsylvania Bi-Manual Work Sample.

Presently, both the JEVS and Tower systems are being used with the blind, but research is needed to determine success (UWSBC, 1975).

There is no point in using current work samples, adapting instructions, or developing new work samples until evaluators know what special traits of a blind person should be measured by work sample testing. At the Conference on the Use of Work Samples with Blind Clients (1975), the following list was compiled: kinaesthetic memory, spatial relations, imaging ability, auditory discrimination, sound localization, tactile discrimination, physical orientation, equilibrium, fatigue factor, and control of limp materials such as plastic. These factors should be considered in the development of new work samples for use with the blind.

Further criteria in using and developing work samples depend on their use. At the conference mentioned above, six uses were defined: diagnostic, predictive, counseling tool, motivating, occupational exploration, and training.

Besides the use to which work samples will be put, another question is that of modification. Several criteria were suggested at the conference: modifications should not be made unless they could also be made on the actual job in industry; some modifications might improve the work sample for sighted clients; if there are any changes in the work sample it must be renormed; if modifications are required to make the sample safe for a blind person to do, then the same modifications would probably make it safer for the sighted person on the actual job; and the best modifications are those made in the instructions and practice time.

Evaluators must also consider norms when using work samples with a blind client. The recommendation of the conference (UWSBC, 1975) suggested that, although it is best to measure clients against industrial standards, the evaluator must realize that industrial standards are set on experienced workers, not someone like the client who is totally unfamiliar with the job. Also, they claim that since industry only expects 70% performance of industrial standard from a new worker, perhaps that should be the criteria for any applicant or new worker. A final consideration is that learning takes place with continued practice on most jobs.

Hoffman (1970) took a wide view of the whole evaluation process by noting that work evaluation permits not only evaluation of current abilities, but of learning potential and ability to improve with practice. This must be taken into consideration in the administration of work samples. He also noted additional factors to be considered. The evaluator must decide how much he should guide the client's hands to orient him to the task, how many trials the client should get before being scored, whether to count all the trials or just the best two out of three, and whether to administer first with no special instruction, then provide additional help and readminister the task. Other factors include whether the person has any vision at all and if he relies on it, how well he uses tactual modality in using braille or special tools, and the fatigue factor which may not be present in sighted clients.

The conference on the Use of Work Samples with Blind Clients (1975) suggested several recommendations for further work in this area. Recommendation number 2 suggested more research and development of materials concerning evaluation of blind clients. Recommendation number 3 states, "Some (conferees) felt the need for a special manual on adaptation, development, and interpretation of work samples for blind clients" (UWSBC, 1975, p. 37). This paper will attempt to fill that need.

EVALUATION PLANNING

Ideally, when a counselor refers a blind client for evaluation, he indicates what he needs to know about the client in order to place him in a job. However, in reality, the counselor often does not provide this information and the evaluator is left to decide how to structure the evaluation and what information will help the counselor in the placement process.

The evaluator is aided in the process by the CARF (1976) standards, which outline the basic, minimum information to be obtained during any evaluation. CARF indicates the techniques which the evaluator may use to obtain this information, including interviews, behavior observations, psychological tests, work samples, simulated job stations, and on-the-job evaluation.

The major headings in the following outline are taken from the CARF (1976) standards. Under each major heading are related factors which have been suggested by work evaluators and placement specialists who work with the blind. While many are not behaviors, they are skills and worker characteristics which should be observed and recorded since they relate directly to a person's employability. If these basic points are assessed and documented in the final evaluation report, the counselor should have an adequate understanding of the client's employment potential.

Obviously, not all the factors in this outline can be (or should be) dealt with using work samples. The evaluator can assess many of these traits during counseling sessions, discussions over a cup of coffee, or in the more formal atmosphere of testing, work sample administration, and career exploration. Some of the information may be provided prior to the evaluation from the referring counselor.

Besides this list, the evaluator should refer to The Dictionary of Occupational Titles (DOT) to determine worker traits, temperaments, general educational development, etc. required for specific jobs in which the client may be interested.

In the following outline, those worker characteristics which can be effectively assessed using a work sample evaluation procedure are indicated by an asterisk (*).

Evaluation Plan for a Blind Client

I. Physical and psychomotor capacities

A. Physical limitations

1. Blindness

a. Congenital or adventitious (age at onset)
b. Acceptance of blindness and ability to discuss it
c. Extent: total or residual vision
d. Prognosis
e. "Blindisms" -- mannerisms which may interfere with worker acceptance
f. Use of glasses or low vision aids

2. Other physical limitations (diabetes, etc.)

a. Medications required and vocational limitations imposed by them
b. Primary disability

B. Psychomotor capacities*

1. Manual dexterity: gross, medium, fine
2. Finger dexterity: gross, medium, fine
3. Manipulative ability of different types of materials such as limp plastic
4. Coordination: general, bimanual, eye-hand, hand-foot, eye-hand-foot
5. Work rhythm
6. Visual discrimination: color, form, texture
7. Tactual discrimination: size, shape, texture, spatial

II. Intellectual capacities*

A. Learning capacity and rate
B. Ability to retain information
C. Need for repetition of instructions
D. Ability to grasp verbal and tactual information
E. Reasoning, problem solving ability
F. Ability to grasp concepts and principles
G. Kinesthetic memory
H. Imagination
I. Ability to determine geometric shapes

III. Emotional stability*

A. Frustration tolerance
B. Achievement needs
C. Degree of anxiety
D. Need for encouragement or feedback
E. Ability and willingness to recognize limitations
F. Ability to make decisions
G. Persistence
H. Ability to believe in or rely on himself

I. Initiative
J. Leadership
K. Preference for working alone, in a small group, or with many other workers close by

IV. Interests, attitudes, knowledge of occupational information

A. Interests*

1. Tested
2. Expressed
3. Manifest

B. Attitudes

1. Response to constructive criticism
2. Response to praise
3. Reaction to assistance
4. Attitude about working

C. Knowledge of occupational information*

1. Realistic knowledge of marketable skills
2. Geographic area preference
3. Specific jobs

a. Training needed
b. Training available

V. Personal, social, and work history

VI. Aptitudes*

A. Aptitudes assessed by standardized aptitude tests such as the General Aptitude Test Battery (GATB)*
B. Aptitudes for specific vocational areas (clerical, mechanical, etc.) assessed by work samples, job tryouts, etc.*

VII. Achievements

A. Educational

1. General education (public school, special education, or school for the visually handicapped)
2. Trade or technical training
3. Reading, spelling, and math levels

B. Specialized skills*

1. Use of office equipment (typewriter, etc.)
2. Use of special aids for the blind (Optacon)
3. Use of hand and power tools
4. Use of braille, talking books, abacus, etc.

VIII. Work skills and work tolerance

A. Work skills*

1. Ability to follow directions (written, verbal, model, diagram, programmed, audiovisual)
2. Ability to recognize and correct errors
3. Ability to package uniformly
4. Degree of variation from procedure
5. Production speed, quantity
6. Production quality, craftsmanship
7. Measuring ability
8. Care in handling
9. Safety consciousness
10. Improvement of work (quality and quantity) with repetition

B. Work tolerance*

1. Ability to work under stress
2. Judgment
3. Neatness
4. Comprehension of piece rate system
5. Sound localization
6. Noise tolerance
7. Directionality
8. Orientation to work area
9. Orientation to work station
10. Fatigue factor: ability to work 8-hour day
11. Sitting tolerance
12. Standing tolerance
13. Ability to respond appropriately to change

IX. Work habits*

A. Punctuality
B. Attendance
C. Concentration, attention span
D. Organization and planning of time, space, and equipment
E. Interpersonal skills

1. Ability to work under various types of supervision: none, close, frequent, occasional
2. Relationship with supervisors or evaluators
3. Relationship with staff
4. Relationship with co-workers or clients
5. Relationship with family (dependent or independent)

X. Work-related capabilities

A. Mobility*

1. Independent travel with aid

a. In familiar surroundings
b. In unfamiliar surroundings

2. Ability to ask for aid
3. Equilibrium

B. Communication*

1. Ability to communicate with supervisors and co-workers verbally
2. Written communication (e.g. large or small print, reads Braille)
3. Ability to use telephone

C. Hygiene*

1. Grooming
2. Appropriate clothing for work situation

D. Money management
E. Homemaking and independent living skills

XI. Job seeking skills

A. Ability to set up appointments
B. Preparation of a resume
C. Interviewing skills

XII. Potential to benefit from further services, which are specifically identified

XIII. Possible job objectives*

XIV. Individual's ability to learn about himself as a result of the information obtained and furnished through the evaluation experience

WORK SAMPLE EVALUATION PURPOSES

Current methods of evaluation are briefly reported in the Review of Literature section. This section will deal with administration of work samples for specific purposes.

At the present time, there are few, if any, commercial work samples in use which were specifically designed for use with blind clients. The Clawson Work Sample Battery is partially used, but several of its components have been discarded because the jobs they represent are obsolete (the Catheter and Valves sections). Most work samples were designed by specific facilities for use with their clients and represent subcontract jobs found in their workshops (Konrath, 1976; Leoni, 1975).

If an evaluator intends to use existing work samples or design new ones, he must first determine the purpose for administering them at all. Conference results (UWSBC, 1975) described six potential rationales, some more useful than others: diagnostic, predictive, counseling tool, motivation, occupational exploration, and training.

The diagnostic use of work sample assessment is the most obvious. The evaluator administers a work sample to determine the client's current functioning level on a particular task or his ability to demonstrate certain basic traits, such as fine finger dexterity or hand-foot coordination. Diagnostic use provides a baseline for the client and evaluator to plan future tasks in the evaluation process as well as basic abilities required by many jobs.

The problem in using work samples for diagnostic purposes is that many of the work samples have very low face validity; i.e., it is hard for the client to see any relationship between putting nuts and bolts in a hole and the actual work he may want to do. This is where good communication between evaluator and client becomes essential, for if the client understands the purpose of the task, he may perform it more willingly. He will then be ready to move on to something which relates more directly to his occupational interests.

The predictive use of work samples is open to question. It is impractical and unreasonable to predict success on a job on the basis of work sample results alone. These results must be incorporated into the findings of the total evaluation. Rather than predicting job success, they may be used more accurately to predict feasibility of training or working toward a specific vocational goal.

Baseline data obtained through diagnostic and predictive use of work samples may provide valuable material for counseling with a client. Rather than just numbers or scores from a paper and pencil test, which may have little meaning for the client, work sample results, in most cases, are concrete. Because they are related to jobs, a client can focus on his abilities, aptitudes, likes, and dislikes which he has realized from the use of various work samples. This would provide the evaluator with valuable information about the client, as well as a built-in link to career exploration possibilities, especially if the work samples and traits have been related to information in the DOT.

The use of work samples to determine motivation of a client is questionable, mainly because work samples cannot represent the total spectrum of jobs in which

a client may be interested. If a client is motivated to nutsy-boltsy jobs, and work samples in a facility are all of the nutsy-boltsy type, fine; however, if a client is more academically oriented, or is interested in any field not represented by available work samples, then work sample results may prove inadequate, and other means of assessment, such as job tryouts, must be found.

One aspect of motivational use is that work samples do provide an immediate indication of success or failure for the client. It is especially important for the evaluator to provide opportunities for success early in the work sample process. This success might come from a work sample representing a job the client has successfully done in the past or a basic trait sample that the client has a good chance of performing well. It should be geared to the intellectual functioning level of the client as well, since most clients are perceptive enough to pick up condescending attitudes.

Perhaps one of the best uses of work samples is in the area of occupational exploration. Again, much of the value comes from face validity. The client's work experience is another factor; a high school student will have had less exposure to different types of jobs, or any jobs at all, than a 40-year-old construction worker blinded in an accident. In using work samples as a means of exploring various career fields, the evaluator should be aware of career ladders, various jobs within a field. For example, someone may be interested in accounting or detailed clerical work. However, through using work samples, the client may realize that visual limitations rule this out, but may function well as a receptionist, message taker, or dictaphone typist.

Using work samples for career exploration may provide a realistic picture of what a person cannot do as well as what he can. Marvin Hegle, industrial education instructor at the School for the Visually Handicapped in Janesville, Wisconsin, commented, "It is just as important for them (the visually handicapped) to know what they cannot do in the way of performing a job as it is to have them learn what they can do" (Janesville Gazette, n.d.). Realizing limitations, clients may be more apt to concentrate on achieving more realistic goals.

The participants at the New Orleans conference (UWSBC, 1975) generally agreed that there is limited use for training with work samples. They should definitely not be used for training for a specific job, but may be used to train someone in the use of basic tools or how to follow different types of instructions.

Once the evaluator has decided on the purpose of administering a particular work sample to a blind client, he is faced with the practical problems of administration. While procedures are often similar to those used with any client, blindness presents certain problems which are not found with a sighted client and the administration may necessarily be different.

MODIFICATION IN ADMINISTRATION PROCEDURES

The organization of this section will parallel the Materials Development Center's Work Sample Manual Clearinghouse Suggested Format and Content of a Work Sample Manual (Thomas, 1973). In this way, evaluators can readily follow modifications which may need to be made in currently used work sample manuals which follow this format.

I. INTRODUCTION

A. Title - The title or a subtitle should indicate that the work sample has been set up for use by the blind or visually impaired.

B. Assessment Description - Note any special aptitudes, abilities, etc. which would be assessed in a blind client using this work sample which would not be important in administering it to a sighted one.

C. Job Listing - No modifications are necessary in this part of the manual.

D. Related Jobs - Do not include only the job from which the work sample was derived, if it was taken from a subcontract in a workshop, for example. Finding related jobs means that the work sample will not become obsolete when the workshop no longer handles that subcontract job. Also, do not limit the list to only those jobs traditionally held by the blind.

E. Validity - Validity is an essential ingredient in order for the work sample to be considered worthwhile. Basically, there are two types of validity: assessment and predictive. Predictive validity is most useful in regards to the total evaluation process rather than just to one work sample (UWSBC, 1975).

Assessment validity includes content, construct, and incremental. Content validity establishes the degree of correspondence between tasks in the work sample and those on the actual job. If the two are similar, the assessment is more valid. Construct validity shows correspondence between the traits required to complete the work sample and those on the job. Incremental validity is the relationship between the information received from that work sample in terms of cost as opposed to similar information received from another work sample at another cost (Dunn, n.d.).

II. INSTRUCTIONS TO THE EVALUATOR

A. Prerequisites - It is especially important to note here any safety precautions the client must take, especially considering his vision. If he will be working around dangerous machinery, adequate and constant supervision by the evaluator or shop supervisor may be necessary. The evaluator must be aware of safety and medical considerations if the work sample is administered to a diabetic blind person who might have an insulin reaction while working around power tools.

B. Work Sample Conditions - It is especially important for clients who are aiming for competitive employment that work samples closely approximate

actual job conditions. Counselors and prospective employers are more impressed with results if conditions were as close as possible to those existing on the job.

C. Administration Equipment - This is an area where major modifications may need to be made for administration to blind clients. List all special tools needed, even if it is only a ruler marked with masking tape at specific intervals. This will save both time and frustration for evaluator and client alike. (See section on specific work sample batteries for specific suggestions of special equipment.)

D. Setup and Breakdown - Instructions provided in this section insure that the work sample is ready to administer when the client comes to the task.

III. ADMINISTRATION

A. Client Orientation - The only modifications necessary in this section would be to identify, if possible, that jobs related to this work sample have been successfully held by a blind person. This information could be obtained from the Occupational Information Library (Greater Detroit Society for the Blind, 1974), some of Bauman's books (e.g., n.d. & 1962), or from placement information from the facility's own files. It is important for the client to know that his visual handicap might not eliminate this job for him in order for him to be motivated to perform the work sample to his fullest capacity.

Also included in this orientation should be indications of special training programs for the blind which would prepare them to enter a job related to the work sample. This information may be available locally, through trade or vocational schools, or from the list provided in the Occupational Information Library.

B. Instruction and Demonstration - This is the area where the greatest need for clear and complete instructions exists. It is also where modifications may easily be made for a visually impaired client.

It is important to differentiate between a client's learning ability and his ability to perform the task the work sample demands. The client must fully understand the layout of the work sample, where all the parts are, and exactly what he is to do before he is tested or timed. The work sample should not be a test of the client's learning ability unless it is designed to be such. Work samples are noramlly designed to assess a person's ability or aptitude to perform a certain task related to a job. A blind client cannot use his vision to acclimate himself to what is required, whereas a sighted person needs only a few seconds to visualize the layout and pieces involved in the task, as well as a general idea of what he will be required to do. If the evaluator wants to know how long it takes the client to become familiar with the task, perhaps in connection with learning curve or learning ability on a number of tasks, he may time this period, but it should be called the learning period and must not be timed along with the performance of the actual work sample task.

There are several ways of providing the instructions and orientation. The evaluator must decide how much, if any useable vision the client has and proceed from there.

If a client has enough vision that he uses his eyes rather than his hands to become familiar with a task, administration of the work sample will be quite similar to administration with a fully sighted person. As with any client, the evaluator should mention where each part is located, where tools are, and what is to be done. No special instructions need to be given, but the client should become totally familiar with the requirements of the task and have the opportunity to ask questions before being timed or tested.

Especially with a visually handicapped client, it is important not to make reading a part of the task unless the actual job the work sample represents also requires reading. Written instructions should not be provided on the work sample if verbal instructions would be given on the actual job. If the job requires reading, the evaluator would have to determine whether the client could handle it.

The problem of reading instructions on a step-by-step task, may be resolved in several ways. The most obvious is to have the evaluator stay with the client and read the instructions. However, this poses several problems. The client may feel obligated to hurry through the task, knowing he is keeping the evaluator waiting. The evaluator's presence may be distracting to the client. If the job is not one where continuous supervision is present, the evaluator's presence adds a new factor to the work sample, possibly decreasing the validity.

Some partially sighted clients may be able to read large print. Use of the IBM Selectric typewriter with the "Orator" ball may be helpful, although the letters appear very close together, making this a less than ideal solution. Special typewriters which print in taller and wider letters are available and may be a better solution.

The client with no useable vision or for whom prognosis is not good and who has been advised not to use his eyes presents the greatest problems for administering work samples. However, with orientation geared to his needs, the client can perform satisfactorily.

If the task requires following step-by-step instructions, and if the client can read braille, instructions may be provided in that form. This alternative should only be used if braille could be provided on the job.

Providing instructions on cassette tape may be the best alternative. This allows the client to concentrate on the task itself rather than on the directions and may provide a more accurate picture of the client's ability in the area measured by the work sample.

Of course, the client must be taught how to work the cassette and feel comfortable in using all the controls. If possible, a foot pedal should be connected to the cassette, freeing the client's hands to do

the work sample. Some foot pedals are made so that the client can back the tape up to have the instructions repeated. The evaluator need only provide instructions on use of the cassette recorder, since orientation instructions could be incorporated right into the tape itself, allowing the client to learn the procedure at his own pace. The evaluator should stay near the client until he is sure the cassette is working properly and until the client learns the task. After ascertaining that all is going well, he may then begin timing the client on the actual work sample task.

Besides the verbal instructions, a totally blind client may need a tactual orientation to the work sample task. In this case, it is best for the evaluator to give the directions verbally, after first describing the layout of the sample and the tools to be used. The evaluator should guide the client's hands over the parts as they are mentioned. Then the client should be allowed to go over them at least once more, naming the parts and asking questions. If he requires more time, the evaluator should indicate that there is no hurry and that he will be available to answer any questions or provide further explanation.

If a work sample requires that pieces be put together in a certain way, the evaluator should guide the client's hands and assemble the pieces correctly, then have the client repeat the process on his own to make sure he understands. An example of a thorough tactual orientation is provided in Appendix II.

To help orient a client to a particular assembly task, a model of the completed assembly, or several models of the various steps, may be provided. The client then has something concrete to which to refer. This also provides the evaluator with the opportunity to determine how well the client can duplicate a model.

If a client becomes fatigued or confused by any of the above methods of instruction, it may be wise to have him stop and take a short break at a logical stopping point before administering the test itself. This will provide the client an opportunity to think the instructions through, ask questions, and indicate that he is ready to do the actual work sample. In a very complex task, a break would definitely be advisable. If the client feels it is necessary, he can then go back to the beginning and review the instructions before proceeding.

No matter how the instructions and orientation are presented, the evaluator must be certain that the client fully understands what is expected of him before allowing him to begin the timed and scored work sample. One way to determine this is to have the client describe the instructions in his own words or demonstrate his understanding.

Another problem encountered with some work samples is that they require the client to fill out an answer sheet or indicate responses in a written fashion. Modifications may need to be made in this area. If the test is multiple choice, the client can indicate his choice and the evaluator can mark down the response on the answer sheet. The evaluator must judge for himself the modifications needed, keeping in mind that they are useful only if the same modifications could be made on the real job.

The evaluator must determine the need for special clothing or safety apparatus, keeping in mind the limitations posed by the client's vision. Again, the guiding principle is whether or not the client would use it or wear it on a real job under similar circumstances. Could the client get a job working around hazardous machinery? If so, then the client must be aware of the need for safety.

There is an easy and efficient way to set up a work sample manual when it is to be used with both sighted and visually impaired clients. If an IBM Selectric typewriter is available, all information pertaining to use of the work sample with the visually impaired should be typed in cursive type. If this is unfeasible, then all information pertaining to use with the visually impaired could be capitalized or underlined, anything that would set it off from the rest of the copy. This was suggested by E. L. Chambers in her manual for the Revised Reisterer Mechanical Aptitude Work Sample (1974). Chambers suggested, "unless otherwise stated in cursive type, comments or instructions in regular type will refer to all evaluees" (Chambers, 1974, p. 1). (See example in Appendix III.)

IV. SCORING

A. Technique - This section should indicate whether this is the first or subsequent administration of the work sample. Multiple administration of work samples has been suggested (Brandon, 1976; Tillman, 1971), since this provides an opportunity for the person to improve with learning and practice according to the principles of the learning curve theory.

The basics of this theory are quite easy. A work sample is administered several times to a client. His time and error scores are plotted on a graph, usually indicating improvement. Four factors are important: (1) learning is shown by a curve indicating improved performance; (2) rate of learning is shown by the slope of the curve; (3) maximum improvement is shown by a leveling off of the curve; and (4) the individual's rate of learning and maximum performance may be compared to another group, presumably a "normal" or nonhandicapped population (Tillman, 1971).

The question of special tools, jigs, and fixtures for the blind is answered by the same principle as for other modifications--if it could be used on the real job, it could (and should) be used in the work sample. For example, in a task requiring measuring, rulers may be marked at certain intervals with a piece of tape, or tools made especially for use with the blind may be provided. The American Foundation for the Blind (1973) has published a catalog of tools as well as instruments to aid in activities of daily living, etc.

The results of the recent conference (UWSBC, 1975) indicate that,

> When needed and appropriate, jigs and fixtures should certainly be used and the evaluator should make the client aware that jigs and fixtures are commonplace in

industry. Jigs reduce fatigue, make possible accurate duplication of parts and improve production and safety (p. 30).

Specific indications of modifications will be included in the section dealing with specific work sample batteries.

B. Tables - All tables and scales used in scoring the work sample and converting the raw scores into meaningful information must be included and would require no modification for use with the blind.

C. Forms - Copies of all forms used for responding to, observing, and rating the work sample need to be included.

D. Description of Norm Group - There is disagreement in the field regarding norms. Possibilities for norm groups include: A blind population, a generally handicapped population, a "normal" population, job applicants, experienced industrial workers, etc. The arguments run in favor of industrial norms, since the goal of evaluation is placement in competitive industry. However,

> this raises further question as to acceptable performance levels in competitive industry; i.e., is 70% of the leveled time standard acceptable to industry for selection or must the disabled be functioning at 110% to be selected (UWSBC, 1975, pp. 60-61).

If industrial standards are used, three factors must be kept in mind: (1) industrial standards usually are not set on inexperienced workers, which a client would be, (2) if you use the industrial standard, the client should be expected to meet 50-70% of that standard, since that is what industry would expect of a new employee, and (3) allowing adequate learning and practice time before scoring the work sample might provide a better indication of the client's functioning level (UWSBC, 1975, pp. 26-27).

It should also be recognized that work sample performance may not actually fall on a pass-fail line, but usually somewhere along the continuum.

> Since the goal is placement on a job, perhaps the highest standard the client should be expected to match within the facility is the beginning sighted worker standard; when he reaches that point he is ready to compete on the real job (UWSBC, 1975, p. 27).

Another viewpoint is that,

> the very fact that blind individuals can perform well enough to place well into norms based on 'normal' individuals makes it possible to at least compare their performance against these same 'normal' populations, a giant step forward from having to make conjectural

inferences about a particular blind individual's vocational fitness based on observed performance on unsuitable testing vehicles (results of study on use of Singer/Graflex with blind students, n.d., n.p.).

E. Norming Method - Identify and describe the norming technique or procedure used. This could include industrial norms, standardized statistical methods, percentile groupings, Methods-Time-Measurement, etc.

F. Reliability - As reliability studies are initiated, list and describe all outcomes giving reference to type and size of sample group and procedure used. If an existing work sample is changed in any way to reflect use with a different population, new reliability and validity studies must be done.

V. INSIGHTS

The work sample developer should indicate in this section consistent client behaviors which took place during the norming period. This section of the manual should also indicate the sample's strengths and weaknesses, what "bugs" it might have, what it does and does not actually assess, what problems to look for, and possible solutions.

Besides these points, this section provides an opportunity for the developer of a work sample for use with the blind to describe those aspects of the sample which have proven particularly effective in evaluating a blind client.

VI. CONSTRUCTION

A. Diagrams and/or Photographs - The only modifications required here would be if special tools, equipment, jigs, or instructions (braille, large print, cassette, etc.) are required. If the work sample can be used with the nonvisually handicapped population as well as the blind, a separate photograph should show the special equipment.

B. Materials List - Special parts required for the administration of the work sample to the visually impaired should be identified, especially if they must be ordered from a source not commonly known.

C. Assembly Instructions - Directions are especially important if a special model or tactual diagram is being provided for use with the visually impaired client.

VII. REFERENCES

Any information used in the manual which may need to be cited for reasons of credit or interest should be listed in a separate REFERENCES section utilizing any standard reference or bibliographic form.

APPENDIX

This section is to be included in the work sample manual only if information found in the manual content is too lengthy to be included in that section.

COMMERCIAL WORK SAMPLE BATTERIES

The remainder of this paper deals with the practical application of the principles and modifications discussed thus far applied to several of the commercial work sample batteries now in common use (JEVS, Singer and Valpar). The charts following the general discussion of each battery provides the following information: the name of the work sample and the modifications in instructions or materials suggested when using the work sample with a visually impaired client. It is assumed that the suggestions made previously under Client Orientation and Instructions apply to all work samples, so only modifications inherent in this particular sample will be charted.

Jewish Employment and Vocational Service Work Sample Battery

According to Zimmerman,

> A JEVS Work Sample is a work activity performed in a simulated work setting and designed to reflect primary factors inherent in actual jobs. The philosophy of the JEVS Work Sample System is that the evaluation staff work with a client over a considerable period of time to measure factors repeatedly in several tasks and in multiple combinations with other factors (UWSBC, 1975, pp. 45-46).

The JEVS battery is unique among the three being considered since the 28 samples are arranged in Worker Trait Groups according to difficulty. The system is designed to be used as a whole and allows career exploration among a variety of jobs. According to Zimmerman:

> JEVS is new at working with blind populations. We know that work samples cannot solve all the problems of the blind client. A work sample battery is not a panacea (UWSBC, 1975, p. 47).

She indicated that work is beginning on adapting the battery for use with the blind and visually impaired, stating,

> We wish to measure specific work factors that are involved when vision is impaired; currently we are looking at skills such as tactile positioning sense, attention to auditory cues, and equipment monitoring. As part of this research we are considering using MODAPTS (Modular Arrangement of Predetermined Time Standards) to define industrial time standards and assess the most efficient methods in various tasks (ibid.).

Although many of the tasks in the JEVS battery could provide both good information about a client's abilities and some career exploration, some of the tasks could not be done by the severely visually impaired or might have low relationship to potential jobs. Most notably, these are the tasks in the clerical area or those where color discrimination is essential for the successful completion of the task.

JEWISH EMPLOYMENT AND VOCATIONAL SERVICE WORK SAMPLE BATTERY (JEVS)

Work Sample	Suggested Modifications
Nut, bolt, washer assembly	Make sure all parts are present. Have one of each set assembled as a model.
Rubber stamping	Sight required to follow model, but verbal instructions could be substituted.
Washer threading	Use raised or specially marked ruler.
Budgette assembly	Provide metal needle threader and raised or marked ruler or a sample piece of string of the correct length.
Sign making	Requires measuring and drawing. May not be related to feasible jobs.
Tile sorting	Requires enough vision to discriminate colors.
Nut packing	No modifications needed.
Collating leather samples	Requires sight to discriminate colors and textures.
Grommet assembly	Can be done totally by feel.*
Coupling (union) assembly	Can be done totally by feel with good description and if client is familiar with terms. May provide model or use wide felt tip pen to draw diagram for partially sighted clients.
Belt assembly	No modifications needed.
Ladder assembly	No modifications needed.
Metal square fabricating	Has written instructions. May be dangerous and unrelated to feasible jobs.

JEVS (continued)

Work Sample	Suggested Modifications
Hardware assembly	No modifications needed.
Telephone assembly	Instructions and written and diagram. Requires color discrimination for wires. May be unrelated to jobs held by visually impaired clients.
Large lock assembly	Put tape on TOP for identification. Make simplified diagram with heavier black lines for those with some vision.
Filing by numbers	Impractical for low vision. May be done in braille or large print if jobs could be adapted.
Proofreading	Impractical for low vision. DOT lists job for braille proof-reader, so could be adapted to that.
Filing by three letters	Same as for filing by numbers.
Nail & screw sorting	Could be done totally by feel.
Adding machine	Tedious & impractical unless done in large print or braille.
Payroll computation	Impractical.
Computing postage	Impractical.
Typing	Make into dictaphone typing.
Resistor reading	Requires good sight.
Pipe assembly	No modifications needed.
Blouse making	Best for someone with prior knowledge of basic sewing techniques.
Vest making	Best for someone with prior knowledge of basic sewing techniques.

JEVS (continued)

Work Sample	Suggested Modifications
Condensing principle drawing	Impractical, unrelated to feasible jobs.

*CAUTION: During administration of the Grommet Assembly work sample, make sure that the client keeps fingers outside of, not on top of or underneath, the grommet while pressure is being applied. Having fingernail under the grommet can result in painful injury.

Singer Vocational Evaluation System

The Singer Vocational Evaluation System is unique among commercial work sample batteries. Each of the work samples is a self-contained unit with instructions provided via cassette tape and filmstrip. There is no prescribed order of administration, and a client may use one or more, depending on his interests.

The purpose of the system is to

> help an individual make a sound vocational selection by: (1) exploring the world of work relative to definite occupational areas; (2) facilitating an assessment of the individual's ability to do work; (3) determining general areas of vocational interest and aptitude; and (4) defining additional training needs (Brandt, 1973, p. 5).

The Wisconsin School for the Visually Handicapped successfully uses the Singer system "for evaluation, for exploration, for hands-on experiences in regularly defined situations, for listening to directions, in relation to our Mobility Program, for staff involvement" (Arndt, 1976). Of the students using the system, 75% had some vision and were able to follow the filmstrip. Those having no vision did not use stations requiring sight, Business and Office, Medical, and Drafting.

Modifications were slight--use of braille rulers; individual instruction, description of tool locations and reference points on objects being fabricated; use of try square where repeated measurement of materials of the same length as the the length that preceded it was required; large-face type on 3 X 5 cards in the Office Trades work station; use of an awl to scratch-mark wood instead of a pencil; and use of a small tray in the Bench Assembly task to hold initial selection of one screw and one bolt of each type. Arndt (1976) concluded, "While the Graflex was not designed specifically for serving the visually handicapped, it adapts itself readily to this population."

It is significant to note that the Evaluator's Manual emphasizes,

> It is important that the evaluator advise the participant that he cannot pass or fail any activities in the System; it is merely an experience in which he and the evaluator take part in order to be able to make a more meaningful career selection (Brandt, 1973, pp. 9-10).

However, students at the Wisconsin School for the Visually Handicapped were rated for both time and quality according to the norms prescribed by the manufacturer. A score of 1 is attainable by

> even the slowest and most careless worker, so only the scores of 2 or higher are recognized as being of significant achievement. Fully 69.5% of the 23 evaluations completed by the 13 individuals referred, of which 8 were totally blind, reflected a score of 2 or more for both time and quality. Furthermore, 12 of the same 23 evaluations, or 52%, were of time and quality scores of 3 or higher (Arndt, 1976).

As reflected in Appendix IV, while time scores were generally low, quality scores were higher, a consistent finding with other evaluation system results.

The Evaluator's Manual for the Singer system is the only one which indicates the possibility of repeating a program. Rationale include: (1) if the client wants to, (2) if the evaluator feels a training or learning experience is desirable, or (3) to determine learning ability. The manual includes a "Special Procedures" section which deals with the administration of the Singer to illiterates, but does not specify any other specific handicap group.

Work Sample	Suggested Modifications
Basic tools	Try-square for repeated measurements and awl to scratch-mark wood.
Bench assembly	No modifications needed.
Drafting	Requires sight for measuring and drawing. Limited relationship to feasible jobs.
Electrical wiring	Braille rulers, try-square. Limited relationship to feasible jobs.
Plumbing and pipefitting	Braille ruler, try-square, awl.
Carpentry and woodworking	Braille ruler, try-square, awl.
Refrigeration, heating, and air conditioning	Braille ruler, awl.
Soldering & welding	May be dangerous for client with very low vision. Limited relationship to feasible jobs.
Office & sales clerk	Requires reading of small forms. Use large type on 3 X 5 cards or braille if forms could be used.
Needle trades	Needle threader, tape on bobbin plate to indicate seam distance. Good relationship to jobs held by many blind workers.
Masonry	Special level & measuring devices. Limited relationship to feasible jobs.
Sheet metal working	Measuring devices. Limited relationship to feasible jobs.
Cooking & baking	Measuring cups, oven markings must be marked for tactual use.

SINGER (continued)

Work Sample	Suggested Modifications
Small engine service	Requires some sight, special tools.
Medical service	Poor relationship to feasible jobs. Requires adequate sight.
Cosmetology	Requires some sight to match colors.
Data calculation & recording	Impractical without good vision due to standard forms with small spaces.
Sample making	Requires some vision. Use braille or specially marked ruler.
Soil testing	Requires some vision. May be unrelated to feasible jobs.

Valpar Component Work Sample Series

The relatively new Valpar Component Work Sample Series was developed for use in evaluating industrially injured workers. Each work sample is separate and the components may be used individually. They are primarily trait and factor samples, with some providing poor face validity in relationship to specific jobs. However, each manual relates the task to a Worker Trait Group Arrangement in the DOT.

Many of the 12 samples may be used with blind clients with little or no modification since no reading is required. Some require a considerable amount of vision, while others can be done totally by feel. As with all the systems, it is important that the client be allowed plenty of time to orient himself to the task, learn where all the parts are, and what is expected of him before he is tested.

Valpar Work Sample 2 is the only one in which the manual indicates applicability for blind clients and that norms are being gathered for this population. "We have been gathering norms on the visually impaired; however, to date these have not been statistically computed for distribution" (Brandon, 1976). Brandon claimed that many work samples can be useful in evaluating blind clients and explained his method:

> The way I accomplished this was not through typical orientation procedures but by providing a learning curve based on readministration of both psychometric tools and work samples. By plotting the scores on readministration, one can establish a plateauing level of ability. This plateauing level is usually reflective of this person's ability after allowing his tactile skills to adjust to the task at hand. When plateauing occurs, this score then should be compared to the sighted norms, thus allowing the counselor or evaluator to determine the individual's actual competitiveness on a given job (Brandon, 1976).

Brandon (1976) indicated that the Valpar Corporation is currently designing work samples specifically for use with the blind. They should be available late in 1976.

VALPAR COMPONENT WORK SAMPLE SERIES

Work Sample	Suggested Modifications
Small tools (mechanical)	Verify that all tools & correct number of parts are in tool kit. Ask client if he has any specially adapted tools he usually uses.
Size discrimination	No modifications needed.
Numerical sorting	Person must have enough vision to see small black numbers on white plastic chips.
Upper extremity range of motion	Can be done totally by feel with no modifications.
Clerical comprehension and aptitude	Requires reading and using standard forms. Good vision required.
Independent problem solving	Requires vision. Evaluator can punch answers in answer sheet.
Multi-level sorting	Requires enough vision to read small numbers on plastic chips.
Simulated assembly	No vision or modifications needed.
Whole body range of motion	No vision or modifications needed.
Tri-level measurement	Requires vision adequate to read numbers on a micrometer. Limited relationship to feasible jobs.
Eye-hand-foot coordination	Requires vision.
Soldering & inspection (electronic)	Manual suggests should not be used by visually impaired.

CONCLUSIONS

There is a definite need for good work samples for use in evaluating the blind and visually impaired. Results, used with scores from psychometric tests, counseling, career exploration, and situational assessment, can aid the evaluator and the client in determining potential vocational goals.

Although some question the validity of adapting any work sample to anyone with a specific disability, the goal of evaluation is placement of handicapped people in employment commensurate with their abilities, despite their handicap. For this reason, there is no justification for not designing or adapting work samples for use with the blind, provided that similar modifications could be made in a job similar to the work sample or that the work sample will provide general information about a client which would be relevant to a number of different jobs.

Modifications in work samples for the blind need most often be made only in the orientation and instruction procedures. This provides opportunity for the blind client to learn the task comfortably and thoroughly before being tested on his ability to perform it. If desirable, the evaluator can time the learning process, but this must be separate and distinct from the timing of the work sample task itself.

Considering the question of norms, several viewpoints may be taken. If the counselor and employer feel most comfortable using industrial norms, the evaluator can administer the work sample several times to determine the plateau at which the client functions consistently, then compare this level with the industrial norms. It must also be kept in mind that entry level workers and inexperienced workers will probably not attain the same rates as experienced workers; 70% is an approximate goal.

Using the standard format which is being adopted, work sample developers and administrators can easily modify manuals to include directions for use with the visually impaired. A standard format is provided.

ACKNOWLEDGEMENTS

The author gratefully acknowledges the assistance of those who work in the field of evaluation of the blind who have graciously shared their expertise during the course of this project. Special thanks are due to Mr. Carl Konrath of the Chicago Lighthouse for the Blind for allowing reproduction of the material in Appendix II.

REFERENCES

Arndt, R. Personal communication, Feb. 24, 1976.

Bauman, M. K. Personal communication, March 5, 1976.

Bauman, M. K. Tests used in the psychological evaluation of blind and visually handicapped persons (a report). A manual of norms for tests used in counseling blind persons (a reprint). Washington, D.C.: American Association of Workers for the Blind, Inc., 1968.

Bauman, M. K. & Yoder, N. M. Placing the blind and visually handicapped in clerical, industrial and service fields. Prepared under a grant from the Vocational Rehabilitation Administration, Department of Health, Education, and Welfare, Washington, D.C., n.d.

Bauman, M. K. & Yoder, N. M. Placing the blind and visually handicapped in professional occupations. Prepared under a grant from the Office of Vocational Rehabilitation, Department of Health, Education, and Welfare, 1962.

Brandon, T. L. Personal communication, Feb. 25, 1976.

Brandt, W. B. Singer vocational evaluation system: evaluator's manual. Rochester, N.Y.: Singer Education Division, Education Systems, 1973.

Chambers, E. L. Revised Reisterer mechanical aptitude work sample. Unpublished master's thesis, University of Wisconsin--Stout, 1974.

Clark, L. L. (ed.) International catalog: aids and appliances for blind and visually impaired persons. New York: American Foundation for the Blind, Inc., 1973.

Clawson, L. A study of the Clawson work sample tests for measuring the manual dexterity of the blind. New Outlook for the Blind, 1968, 62:182-187.

Commission on Accreditation of Rehabilitation Facilities, Standards manual for rehabilitation facilities. Chicago: CARF, 1976.

Dunn, D. J. Validating work evaluation procedures. Menomonie, Wisconsin: University of Wisconsin-Stout, n.d.

Garrett, J. F. & Levine, E. S. Rehabilitation practices with the physically disabled. New York & London: Columbia University Press, 1973.

Greater Detroit Society for the Blind. Occupational Information Library, 1974.

Hoffman, P. Problems of evaluating the visually impaired. Information Bulletin, Institute for Vocational Rehabilitation, Stout State University, 1970, 2(4).

Hoffman, P. Clawson work sample test for measuring manual dexterity of the blind. Information Bulletin, Institute for Vocational Rehabilitation, Stout State University, 1970, 2(5).

Konrath, C. J. Personal communication, Feb. 11, 1976.

Leoni, M. Personal communication, Nov. 22, 1975.

New York Institute for the Education of the Blind, Instruction manual: Directions for administering manual and mechanical aptitude tests. New York: NYIEB, 1945.

Planning services for the blind for the decade of the '70's. Final report of a conference held at Holiday Inn of St. Louis Northeast, Hazelwood, Missouri, March 25-28, 1973, with support from the Rehabilitation Services Administration.

Roberts, J. R. & Bauman, M. K. Motor skills tests adapted to the blind: Minnesota rate of manipulation test, Pennsylvania bi-manual work sample. Minneapolis: Educational Test Bureau, 1944.

Routh, T. A. Rehabilitation counseling of the blind. Springfield, Illinois: Charles C. Thomas, 1970.

Rusalem, H. Coping with the unseen environment: An introduction to the vocational rehabilitation of blind persons. New York & London: Teachers College Press, Teachers College, Columbia University, 1972.

Sax, A. Work samples. In Crow, S. H. (ed.), Positions on the practice of vocational evaluation. Washington, D.C.: Vocational Evaluation and Work Adjustment Association, Vocational Evaluation Project-Year One, 1975, 30-36.

Stajanovic, E. L. & Carballo, J. L. A study for the purpose of establishing the relative productivity of techniques for placing blind persons in competitive employment. Jackson, Mississippi: Rehabilitation Division for the Blind, 1963.

Thomas, S. W. Suggested format and content of a work sample manual. Menomonie, Wisconsin: University of Wisconsin-Stout, 1973.

Thompson, A. S. Occupational placement and career development. In M. H. Goldberg with J. R. Swinton (eds.), Blindness research: The expanding frontiers, a liberal studies perspective. University Park & London: Pennsylvania State University Press, 1969, pp. 418-432.

Tillman, E. The learning curve in work evaluation. Menomonie, Wisconsin: Institute for Vocational Rehabilitation, Stout State University, Informational Bulletin, III(5), 1971.

U. S. Civil Service Commission, Bureau of Recruiting and Examining, BRE-43. From slogan to reality: The severely handicapped in federal service. Washington: Feb. 1973.

U. S. Department of Labor, Dictionary of Occupational Titles, Vols. 1 & 2, suppls. 1 & 2. Washington, D.C.: U. S. Government Printing Office, 1965.

Use of work samples with blind clients. Final report of a conference held at Braniff Hotel, New Orleans, Louisiana, Feb. 26-28, 1975, with support of Rehabilitation Services Administration, HEW. Published by Nevil Interagency Referral Service, Inc., Mary K. Bauman, Director, 1975.

Vocational Evaluation and Work Adjustment Association, Vocational evaluation project final report. Menomonie, Wisconsin: Stout Vocational Rehabilitation Institute, Materials Development Center Reprint No. 12, VEWAA Bulletin, vol. 8, July 1975 special edition.

Vocational testing uses new method. Janesville (WI) Gazette, n.d.

Wisconsin School for the Visually Handicapped, Results of a study of use of Singer/Graflex vocational evaluation system, 1974.

Wilson, E. Assessing the readiness of blind persons for vocational placement. New Outlook for the Blind, 1974, pp. 57-60.

Yoder, N. M. Occupations and placement for the blind. In M. H. Goldberg with J. R. Swinton (eds.), Blindness research: The expanding frontiers, a liberal studies perspective. University Park & London: Pennsylvania State University Press, 1969, pp. 433-451.

APPENDIX I

Definition of Terms

Blind has been defined in several ways. Legally, a person is blind if his central visual acuity is 20/200 or less in the better eye with best correction or the visual field is constricted to 20 degrees or less in widest diameter (Garrett & Levine, 1973; Rusalem, 1972). Another definition has to do with the person's travel vision, or his ability to travel in unfamiliar locations unaided. A definition appropriate for use in this paper is the inability to read words as they usually appear in print, i.e., newspaper print or instructions used in work samples. Blind would also apply to anyone referred for evaluation with the designation of blind or visually impaired as a factor limiting employment. In this paper, the word "blind" is used interchangeably with "visually impaired" or "visually handicapped."

Competitive employment means employment in a community based job with appropriate renumeration. The term implies that the worker's performance must conform to the established standards within the plant, business, or industry. The term is frequently used to differentiate sheltered employment from jobs in industry.

A psychological test is a set of standardized or controlled stimuli designed to elicit a representative sample of behavior.

Vocational evaluation is a comprehensive process that utilizes work, real or simulated, as the focal point for assessment and vocational counseling to assist individuals in vocational development. It incorporates medical, psychological, social, vocational, educational, cultural, and economic data to assist in the attainment of the goals of the evaluative process (VEWAA, 1975).

APPENDIX II

THE CHICAGO LIGHTHOUSE FOR THE BLIND

242-A PLUG TERMINAL BLOCK ASSEMBLY - WORK SAMPLE

SUB CONTRACT WORK SAMPLE

developed by

CARL KONRATH

Vocational Evaluator

The Chicago Lighthouse for the Blind

1850 West Roosevelt Road

Chicago, Illinois 60608

B. INSTRUCTION AND DEMONSTRATION - BLIND CLIENTS

The absence of sight necessitates the ultimate use of verbal and tactual information. The following statements are designed to deal with the intricacies of instructional procedures for the blind.

All instruction given to the blind must of necessity be lengthy to compensate for the lack of vision. Orientation for the blind is a lengthier procedure because of the obvious visual deprivation but will vary depending on what residual vision may remain. Comprehension of instruction also depends on whether the visual loss is congenital or adventitious in origin. If the loss is adventitious there may be strong visual images to relate to whereas this would be lacking in the congenitally blind.

With the totally blinded individual or the extremely limited partial, the instructor or evaluator will often need to perform the assembly with tactual manipulation of the client's hands.

When administering the following directions, instructions must be given step by step and the supervisor must be sure that the client understands each step before proceeding to the next. The evaluator remains on site with the client until he is satisfied with the quality of performance and feels the person is familiar with and can perform comfortably the complete assignment.

ORIENTATION - Opening Statement - Section IIIA, page 3

B. INSTRUCTION AND DEMONSTRATION

Allow client to sit on a chair at the work sample station. All instructions are to be given verbally assisting the client with a tactual orientation to the shape, size, material composition and location of all components involved. Make a careful study of all instructions so they can be given casually and no information will be overlooked.

Familiarize the client with all task materials and assembly aids -

1. Fixture and assembly aids;

   a) Let client examine hand screwdriver;
   b) Demonstrate and identify Yankee Screwdriver;

The handle of the Yankee screwdriver is held by the right hand. The tip is placed against the table. Left hand finds lock at the end of the handle. The lock is turned clockwise to unlock and counterclockwise to lock. Demonstrate before allowing client to examine by letting client feel the instructor's hand working the lock. Client should lock and unlock the Yankee screwdriver a few times until completely familiarized with the locking procedure.

Direction of Yankee screwdriver is determined by latch at end of the handle. Down towards the driver tip causes the screwdriver to turn clockwise; i.e., to screw in; up towards the driver handle causes the screwdriver to screw

counterclockwise; i.e., to screw out. Center locks the screwdriver from turning. Have the client set the latch for "in." Then with the tip of the driver on the table, let him push down on the handle, slowly with his right hand while feeling the tip action with the left. Also, allow him to experience the tip action when the driver latch is set for "out." Have the client center the latch to lock the screwdriver.

c) Allow the client to examine and locate tactually the two prong fixture.

2. Assembly Components;

Introduce all seven different components of the unit to the client and, guiding his hand tactually locating and identifying each component according to size, shape and material composition -

a) Screws -- top left bin - 6/32 screws;
b) Fiber retaining strip - rectangular four holes (top center bin);
c) Metal retaining strip - rectangular four holes, one side flat, the other side rounded (top right bin);
d) Large "E" Spring - "E" shaped metal spring, has three points, one is broad, one is short, one is long and narrow (pointed) (bottom left);
e) Fiber insulator - "J" shaped or fish hooked shaped, it is a short strip with rectangular arm (center bottom);
f) Small "E" spring - similar in shape to large "E" spring (bottom right);
g) Wooden Block - one side of block has eight grooves or slots. Counting grooves from end of block three grooves then a hole, two grooves then a hole, then three grooves and a hole. Reverse side has four holes, one of the end holes is larger than the other end hole.

After all components have been introduced, have the client independently locate each piece, explore with a finger trace while identifying each component with verbal feedback. Make sure client is well grounded here before continuing.

3. Assembly Instructions to Client:

After the client has become completely familiar with task components and assembly aids, the actual instructions for the work sample assembly can be delivered.

The following is a suggested manner in which the information could be communicated to the client. The Evaluator should be thoroughly familiar with the job so it will not be necessary to make reference to this material during the evaluation. The Evaluator may stand on the right of the Client while giving instructions. The Evaluator should feel free to give any tactual input that seems necessary to communicate the instructions.

Introduction

We are now going to assemble a 242-A Terminal Block. After you are familiar with the method of assembly, it will be your job to assemble terminal blocks for 60 minutes.

Step 1

Make sure your two pronged fixture is aligned lengthwise (parallel) with the table. Take one wooden block from the pan on the left. Hold it with the grooves down. Locate the larger hole at one end of the block. Keep this end to the right. Place your index fingers over the two center holes. Now invert the block and use your index fingers to help guide the center holes of the block onto the prongs of the two prong fixture.

Step 3

Your left hand grasps a large "E" spring from the lower left hand bin while the right hand simultaneously grasps a "J" shaped insulator from the low center bin. (To Instructor: It may be necessary to manipulate the client's hands until he understands what is expected by "simultaneously grasps.") (To Client: Important: you must inspect components for flaws and rejects, damaged or broken materials.) (To Instructor: Blind clients are expected to detect flaws tactually with finger trace.) The thumb and index fingers of your left hand holds the large "E" spring with the narrow point into the thumb. The broad arm of the "E" is held away from the palm. Your right hand places the fiber insulator on top of the large "E" spring with the points in the same direction. The small end arm of the "J" shaped insulator is aligned with the center arm of the "E" spring. The broad arm of the insulator is squared with the broad arm of the "E" spring.

Step 4

Your right hand now takes a small "E" spring and places it on top of the fiber insulator with the points in the same direction. You now square all three pieces along their broad arms.

Step 5

Your right hand (index finger and thumb) now grasps the top right corner of the components. With your left hand, locate the block and fixture on the table in front of you. With your index finger of the left hand locate the first slot in the block. The components are brought down with the right hand to the first slot located by the left hand and insert into the slot from the top right hand side.

Ask for and answer any questions about the assembly procedure thus far.

Step 6

Now repeat the "E" spring assembly seven more times until all eight grooves of the block are filled. Remember to check for defective material.

Step 7

Now that all the grooves are filled, turn the fixture 90^{0} to the right so the fixture is parallel to the table.

Step 8

With your right hand, grasp a metal retaining strip from the top right bread pan. Simultaneously your left hand grasps a fiber retaining strip from the top center bin. Place the flat side of the metal retaining strip on the fiber strip and square them off.

Step 9

Hold the fiber retaining strip and the metal retaining strip with the metal side up. With your index fingers, locate the center holes underneath the fiber retaining strip. Now come down to the fixture and locate the two prongs against your index fingers. Use your index fingers to help guide the strips and bar onto the fixture.

Step 10

The next step should be practiced as follows: Have the client set aside the fixture and take a new fixture, block and metal retaining strip. Have him assemble these without springs. The index fingers are placed on the fixture poles. The thumbs and middle fingers grasp the block at each end. Lift up block & strips--fingers remaining over hole, lift off fixture, thumbs revolve around bottom of block. Invert block, locate prongs with index fingers. Slide the unit onto the fixture. (Watch to see that the movement remains localized. After the client is able to do this easily, go on with the step 10). (See Page 7)

Step 11

Reach up to the top left bin with both hands and take one screw in each hand. Drop these screws into the two end holes of the block.

Step 12 - Practice this step as follows:

Hold the screw for the client between your index finger and thumb. Client locates screw head with index finger and guides screwdriver blade onto head. Client then turns blade gently until blade slides into groove. Practice until the client is comfortable with the procedure.

Now take the Yankee screwdriver and use it to first screw in the left screw until it is just snug. Screw in the right screw until it is tight, then return and tighten the screw on the left.

Step 13

Remove the plug from the fixture and give it a last check to make sure all pieces are correctly assembled and no damaged material has been used. With a finger, trace, see if the screws are tight and the threads protruding slightly. The retaining bar should be on with the flat side against the block and the rounded side showing. From the large hole the springs are arranged with the small "E" spring first. Then the insulator, then the large "E" spring. If the plug is assembled without error, you can place it in the production pan at the left of the bi-level fixture.

Step 14

Do you have any questions so far?

Answer any questions and repeat any steps necessary.

Step 15

If you feel you understand all directions, you may attempt one assembly while I am here to watch in case you should have a question.

Allow client to attempt one assembly without making comment until he has finished or until he requires help. After client has finished, correct pertinent mistakes.

Step 16

Your job is now to work at assembling plugs for the next 60 minutes. You will be graded on how good a job you do and on how many you successfully complete. Before you begin, do you have any more questions?

Answer all questions.

Step 17

Begin Working.

Begin timing.

APPENDIX III

REVISED REISTERER MECHANICAL APTITUDE WORK SAMPLE

(Client Orientation Instructions)

developed by

ELIZABETH LEE CHAMBERS

III. Administration

A. Client Orientation - The following orientation should be read to the evaluee before the actual work sample instructions are given. Instructions labeled 1 & 2 are read to both nonvisually impaired and visually impaired. Instructions labeled 1 are read to nonvisually impaired only. Instructions labeled 2 are read to visually impaired only.

1 & 2

The purpose of the REVISED REISTERER MECHANICAL APTITUDE WORK SAMPLE is to assess your mechanical aptitude, that is, your ability to recognize spatial relations of objects, form perception, and to assess your manual and finger dexterity. The results depend upon your speed and accuracy in completing the assembly.

1 & 2

The task you will perform is an example of skills used by people on the jobs such as mechanical repairman in various fields.

1 Your job will be to assemble as fast as you can the assembly in the drawing in front of you.

2 *Your job will be to assemble as fast as you can the completed assembly in front of you.*

1 & 2

The assembly can only be assembled one way.

B. Instructions and Demonstration - All instructions will be read by the evaluator.

Demonstration and a pre-trial test will be done by the evaluator for the visually impaired.

The evaluator should answer all questions prior to actual testing.

For administration to the visually impaired, the evaluator should let the evaluee become tactually familiar with all the objects to be used in the work sample, by guiding his/her hands to each part while giving the instructions.

After testing has begun, all questions should be answered by referring back to the diagram, *or completed assembly if testing the visually impaired.*

During testing, all performance and behavior observations should be made at a distance from the evaluee to avoid any interference with the execution of the work sample.

Performance skills necessary to adequately complete the mechanical assembly and therefore should be observed by the evaluator during testing are:

1. Spatial relations in order to visualize objects of two or three dimensions and to think visually of geometric forms. *Visually impaired visualize the objects through tactual sense.*

2. Form perception in order to perceive the completed assembly by visual recognition of the diagram *or by tactual sense by the completed assembly.*

3. Manual and finger dexterity in relation to speed and accuracy.

4. Mechanical aptitude in the ability to deal with concrete objects and to manipulate objects as mechanisms.

The evaluator should go over the instructions as many times as necessary.

This work sample can be administered twice to establish and to check retention and the ability to increase speed.

The evaluator may have the evaluee disassemble the work sample after he/she has completed it. This will check his/her organizational ability. A good mechanic will disassemble the work sample and place the parts in an orderly manner so that assembly will be fast and efficient.

If manual dexterity and eye-hand coordination along with organization are the primary purpose of administration of the work sample, present the work sample to the evaluee assembled, and have him/her disassemble and reassemble it.

All the above applies to the visually impaired evaluee, except that a pre-trial test should always be given before the actual timed test. This is necessary in order to allow the evaluee to become tactually familiar with all the objects in the assembly and their location. This also applies to letting the evaluee disassemble, then assemble the assembly.

All questions should be answered before timing starts.

Assistance may be given to a limited degree during pre-trial testing of the visually impaired.

The evaluator should stand to either the left or right side of the evaluee during administration of the work sample.

1 & 2

In front of you are all the materials you will need to make the assembly; 8-Z shaped wood pieces, 10 bolts and 10 rubber tubings are in the box located at the lower right corner of the large box.

The evaluator should point to the objects as he explains the above to the evaluee.

The evaluator should take one or both of the visually impaired evaluee's hands and guide them to each piece of material used in the work sample as they are described. Let the evaluee feel the objects several times, making sure he/she is thoroughly familiar with them and their location.

1

You are to make an assembly exactly like the one in the diagram in front of you. Study the diagram thoroughly before you start your assembly.

The evaluator should point to the diagram.

2

You are to make an assembly exactly like the completed assembly on the box in front of you. Be sure to study the completed assembly thoroughly before you begin to make yours. This will be a pre-trial test so that you can become familiar with the objects; you will not be timed during it.

The evaluator should take one or both hands of the visually impaired evaluee and guide them to the completed assembly. Let him become familiar with its make-up and location on the box. Repeat to him where the other materials he is to use are located.

NR4

Wisconsin School for the Visually Handicapped
Singer/Graflex Vocational Evaluation Performance Data

	Time Scores					Quality Scores				
	1	2	3	4	5	1	2	3	4	5
Basic tools	1		11							111
Bench assembly										
Assembly	111	1					1		111	
Disassembly	111	1								1111
Drafting										
Drawing 1			1						1	
Drawing 2				1					1	
Electrical wiring				1				1		
Plumbing										
Threading			1						1	
Assembly	1									1
Carpentry		1	1				1		1	
Refrigeration		1	1		11			111	1	
Soldering	1								1	
Office trades										
Filing		1	1	1				1		11
Sales			11	1				11	1	
Needle trades					111				1	11
	9	5	9	4	5		2	7	11	12